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ALBERTA
GUIDE TO RANGE CONDITION
AND
STOCKING RATES

By

R. A. Wroe, S. Smoliak,
A. Johnston and L. M. Forbes

1972

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RANGE CONDITION
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R. A. Wroe[1], S. Smoliak[2],
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[1] Alberta Department of Agriculture, Hanna, Alberta
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ALBERTA

RANGE CONDITION

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INTRODUCTION

Range management is defined as *"The art and science of planning and directing range use to obtain sustained maximum animal production, consistent with perpetuation of the natural resources".*

The principles of range management are:

- Balance the number of animals with the available forage supply.
- Use the kinds of livestock most suited to the forage supply and the objectives of management.
- Alternate periods of grazing and rest to manage and maintain the vegetation.
- Obtain a uniform distribution of animals over the range.

The principles of range management are based, in turn, upon two fundamental ecological principles:

- Physical factors, plants, and animals, function as a unit and any change in one factor, such as that caused by fire or grazing, changes the whole complex.
- Vegetational changes are natural phenomena, which follow certain patterns.

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This publication is concerned primarily with the second ecological principle, namely, *"that vegetational changes are natural phenomena, which follow certain patterns"*. The general pattern of vegetational change is shown in Fig. 1; detail as to species change on various range sites for various condition classes can be obtained from tables on pages 15, 16, and 17.

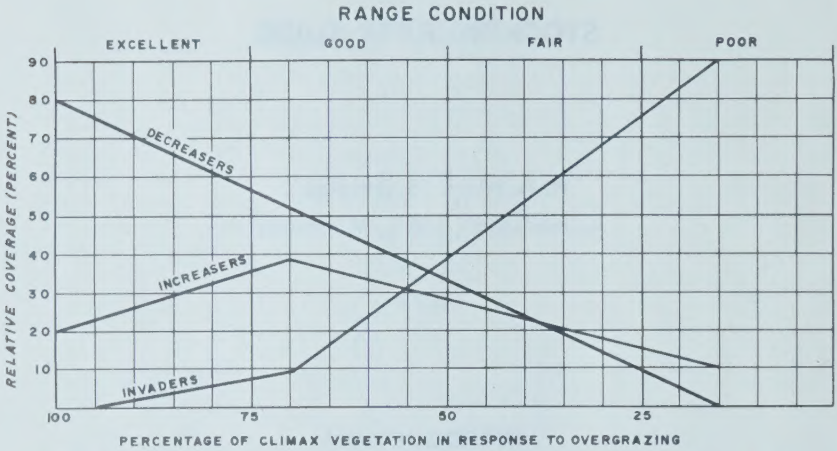

Fig. 1 A graph to show the relationship among decreasers, increasers, and invaders.*

RANGE SITES

Rangelands are areas on which the native vegetation is suitable for grazing. On the prairies this consists of native grasses, forbs, and shrubs. This plant community developed and matured under natural conditions and is the original or climax vegetation of the area.

Each distinct kind of rangeland constitutes a range site, which has a certain potential for producing range plants. Each site has its own environment, which produces a distinctive plant community. A range site retains its capacity to reproduce the original or climax plant community as long as the environment remains unchanged. Once the relationship between the community and its environment is understood, the nature of the climax community can be inferred from a knowledge of the environment even when the community is destroyed or changed by severe disturbance.

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*Dyksterhuis, E. J. 1949. Condition and management of range land based on quantitative ecology. J. Range Management 2: 104-115.

Many disturbances, for example, grazing, drought, fire, and tillage, may change or destroy the vegetation of a site. A slight disturbance may not change the potential of the range site. A severe disturbance with prolonged erosion, reduced fertility, and changed soil and water table conditions will seriously affect the potential of the site.

Vegetation alone cannot be depended upon to identify range sites. The more the site has been disturbed the greater will be the change in the original vegetation. When the original vegetation is absent other features of the area must be used to identify the site. These are the kinds of soil, climate, and topography. These criteria must be consistently associated with the range site.

Different range sites are recognized through differences in the kinds or amounts of plants that make up the climax plant community. Range sites are recognized because of differences in the total yield of similar plant communities. Range sites are also recognized if differences in soil or climate result in a significant difference in the potential plant community. Significant differences in the kind and amount of vegetation of a plant community may result from differences in depth, texture, and salinity of the soil; from differences in topography, climate, and exposure; and from differences in level of water table.

A range site may be identified by means of one or all of the above factors, provided the effect of one or all is reflected in significant differences in composition or yield. Factors that may influence the distribution of grazing but have little effect on composition or yield are not used.

The detail necessary in mapping range sites is determined locally. Range sites that may influence the proper use and management of a pasture or range unit should be included. The smallest area that needs to be mapped will vary with the productivity of the site and its influence on the range unit. A complex of range sites, the separation of which would not be practical, is mapped as one range site. Range sites containing less than 40 acres can be included with a larger site; a larger site may have as much as 20 per cent of its area made up of smaller sites.

Range sites are named to assist in recognizing the important kinds of rangeland. Range site names are based on easily recognized permanent physical features such as the kind of soil, climate, topography, or combinations of these features. Plant names are not used because vegetation changes. Combinations of a permanent physiographic feature and the kind of potential vegetation of the site are more descriptive.

Range Site Description

Names and descriptions of range sites are listed below in order of natural productivity, considering air-dry weight of all herbage produced by all seed plants in ordinary years under climax plant cover:—

1) Range sites that can produce more herbage than ordinary range uplands because of superior soil moisture availability:

WL – Wet Lands: Marshy lands with subirrigation where seepage, ponding, etc., raises water table to above the surface during a part of the growing season; too wet for cultivated crops but too dry for bulrushes, cattails, or true aquatics.

Sb – Subirrigated: Lands with water table rarely above the surface during the growing season but subirrigated most of the growing season.

Ov – Overflow: Areas regularly receiving more soil moisture because of run-in or stream overflow, and areas with water spreading systems.

SL – Saline Lowland: Subirrigated and overflow lands where salt and/or alkali accumulations are apparent and salt-tolerant plants occur over most of the area.

2) Range sites with no obvious soil or moisture limiting factors. The vegetation can make a normal response to climate:

Sa – Sands: Deep, loose, fine sands and very fine sands; surface level to rolling; excepting compact dark nearly level loamy fine sands and loamy very fine sands (not loose medium or coarse sands).

Sv – Savannah: Uplands with deep soils on which grass cover with isolated trees is normal (climax); common at margins of forest and grassland where soil moisture favors tree growth.

Sy – Sandy: All normal, coarse to fine sandy loams (not true sands) plus dark, nearly level, loamy fine sands, and loamy very fine sands.

Si – Silty: All normal loams, silt loams, and silts.

Cy – Clayey: All normal, relatively pervious, sandy to silty clay loams and clays – normally granular.

3) Range sites with characteristics or topographic features that limit soil moisture holding capacity or infiltration rates:

CS – Choppy Sandhills: Deep, loose, fine sands, surface very irregular, with no profile development (sand dune).

L – Limy: Eroded (truncated) or immature soils in which the lime layer occurs at the surface.

SwG – Shallow to Gravel: Shallow soils resting on clean gravelly or cobbly materials, usually in stream bottoms.

BlO – Blowouts: Areas where hard clays or other impervious materials lie close to or at the surface in shallow depressions that occupy 20 to 50 per cent of the area (Solonetz).

TB – Thin Breaks: Mixed soils of various depths with hard rock or other resistant bed outcroppings at different levels on steep irregular slopes.

Gr – Gravel: Coarse textured soils with more than 50 per cent gravel and small stones underlain by loose sand and gravel.

BdL – Badlands: Nearly barren lands broken by drainages dry most of the year with intermingled grazeable areas too small to justify mapping separately.

RANGE CONDITION

Range condition is the present state of the vegetation compared with that of the climax or original for the range site. The purpose in classifying range condition is to measure any deterioration that has taken place in the plant community. It also provides a basis for predicting the degree of improvement that is possible.

Changes in range condition are brought about mainly through prolonged, heavy grazing. A series of wet or dry years may cause changes in range condition.

Range condition has been called range health. Like health, condition is relative. If a range site is described as being in *"good condition"*, the description is always relative to the kind and amount of native vegetation that the particular range site is capable of producing. A major departure from climax indicates a declining range condition. Range condition can be improved by allowing the proportion of climax species to increase. The management goal may stop short of full climax.

Plant density, vigor, erosion, and natural mulch are not used as criteria for determining range condition. Density values are unreliable, for example, cheatgrass may provide a high ground cover on a poor condition range. Vigor ratings are not satisfactory. Erosion and the lack of natural mulch are generally products of a decline in range condition. Therefore, changes in composition, based on weight of species, are used as the primary criteria for determining range condition. In rare instances the single factor of percent climax composition is not adequate to determine condition. This may occur where there has been a rapid loss of density without the usual occupation of bared areas by invading plants. If this occurs, the excessive bare ground or denuded area is to be considered as being occupied by annual plants, or invaders.

RANGE CONDITION CLASSES

In the range condition classification, four classes are used to express the degree to which the composition of the present plant community has departed from that of the climax. These four condition classes, based on the percentage of climax vegetation present in the range site, are:

Class	Climax percentage present
Excellent	76 to 100
Good	51 to 75
Fair	26 to 50
Poor	0 to 25

To assist in determining the range condition class for a range site, the plant species are grouped according to their response to grazing as decreasers, increasers, and invaders.

Decreasers. — These species decrease in relative abundance under continued heavy use. They are palatable to livestock and are the dominant species in the climax. In calculating the range condition class, the total of all such species present is tallied.

Increasers. — These species normally increase in relative abundance as the decreasers decline. They are commonly shorter, less productive species and are co-dominant in the potential plant community or climax. These species increase at first but may decrease later as grazing pressures continue. Only the amounts of increaser species that would be present in the climax are tallied.

Invaders. — These species are not components of the climax vegetation. They invade a site as the decreaser and increasers are reduced by grazing. They may be members of other climax plant communities or exotics. Invaders may be annuals, herbaceous perennials, or shrubs and have some or no grazing value. They are not tallied in determining range condition class.

STOCKING RATES

Recommended stocking rates are based on research results from grazing trials, on local experience, and on clip-plot yields. The recommended stocking rate for each range site and each condition class is a guide to grazing intensity and is not the equivalent of carrying capacity. The greater the difference between present and potential forage production of a site, the greater the difference will be between carrying capacity and recommended stocking rate. Ranges in poor condition will be stocked far under the carrying capacity of the zone to permit range improvement; those in excellent condition will be maintained. Prolonged drought, winter use, and other factors may result in different stocking rates.

For the purpose of planning the use of rangelands, the standard livestock unit is the *"animal unit"* defined as one mature cow, with or without unweaned calf at side, or equivalent. Stocking rates are often expressed in Animal Unit Months (AUM's) per acre.

A basic table to be used for making recommendations on stocking for normal soils of the various precipitation zones (Fig. 2) is presented below:—

Recommended stocking rates* in Animal Unit Months per acre for range condition classes in the various precipitation zones

Average annual precipitation zone	Stocking rates for various range condition classes			
	Excellent 76-100	Good 51-75	Fair 26-50	Poor** 0-25
(Inches)				
22-26	1.20	1.00	.80	.60
18-22	.80	.65	.50	.35
14-18	.50	.40	.30	.20
10-14	.30	.25	.20	.15
6-10	.20	.15	.10	.05

*All rates may be much higher if grazing is limited to the season of complete dormancy.

**Ranges in poor condition should ordinarily be given complete rest and may require reseeding.

The Guide is applied to soil conditions other than those given in the table above as follows:—

Wet Land site: Triple the values for the 18- to 22-inch precipitation zone (p.z.).

Subirrigated site: Double the values for the 18- to 22-inch p.z.
Overflow site: Use values for next higher p.z.

Saline Lowland site: Use values for one-half to one p.z. higher.

Sands, Savannah, Sandy, Silty, and Clayey sites: Use values for the p.z., which are those for normal soils of the climate.

Choppy Sandhills, Shallow to Gravel, Limy, and Blowout sites: Use values for one-half to one zone lower than the p.z.

Thin Breaks site: Use values for one to one and one-half zones lower than the p.z.

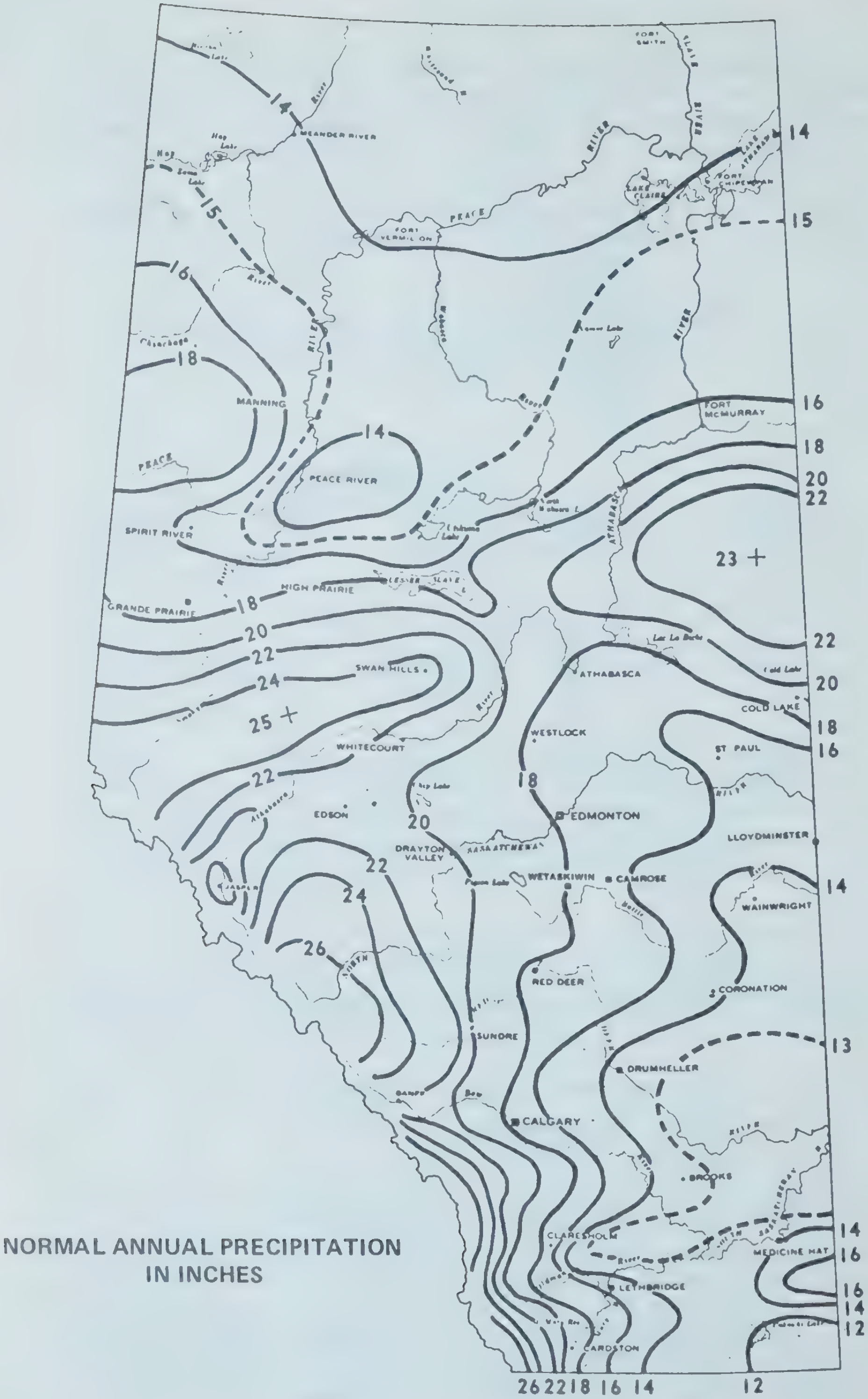

Fig. 2 Normal average precipitation zones in Alberta.

Gravel site: Use values for one and one-half to two zones lower than the p.z., but not less than one-half the value for the 6- to 10-inch p.z.

Badland sites: Use values for two to three zones lower than the p.z., but not less than one-half the values for the 6- to 10-inch p.z.

FIELD USE OF GUIDE

Field use of the Guide involves the following steps:—

- Determine the precipitation zone for the area.
- Identify the range site by determining the kind, depth, texture and drainage of the soil represented.
- Map the area to be surveyed and rough in the vegetation type boundaries.
- Select locations at which composition estimates are to be taken.
- List obvious species and estimate the percentage each contributes to total yield. The estimate can be checked by clipping and weighing the herbage of all the species within selected plots, usually one square yard or meter. Species composition can then be determined on the basis of air-dry herbage. Do not include club moss, lichens, and mosses, in the composition estimates or clipped material.

An example of the estimated composition of a Silty site in the 10- to 14-inch p.z. might be:—

Table of estimated composition and calculated range condition

Species	Estimated composition (%)	Original or climax portion (%)
Needle-and-thread	10	10
Blue grama	25	5
Junegrass	10	5
Wheatgrasses	20	20
Sandberg's bluegrass	10	—
Plains reed grass	5	5
Sedges	10	—
Cactus	5	5
Fringed sage	5	—
	100	50

Reference to the Alberta Guide Table, 10- to 14-inch precipitation zone, shows that needle-and-thread is a decreaser. Therefore any amount present is part of the original vegetation and the 10 per cent recorded is entered in the *"Original or Climax"* column. Blue grama grass is an increaser, hence the estimate of 25 per cent shows an increase of 20 per cent over the maximum of 5 per cent found in the original or climax vegetation. Only 5 per cent is tallied in the *"Original"* column in the table above. Junegrass, an increaser, shows an estimate of 10 per cent, which is 5 per cent over the maximum of 5 per cent normally found in the original or climax vegetation. Only 5 per cent is therefore entered in the *"Climax"* column. The wheatgrasses behave as decreasers on this range site and any amount present is part of the original vegetation. The 20 per cent recorded is entered in the *"Climax"* column. Sandberg's bluegrass, an increaser, is not present in the original vegetation and the 10 per cent recorded is not entered in the *"Climax"* column. Plains reed grass, an increaser, shows no increase on this site. The 5 per cent recorded is not abnormal for the site and is entered in the *"Climax"* column. Sedges, also increasers, are not present in the climax and the 10 per cent recorded is not entered in the *"Climax"* column. Cactus is considered to be a *"Forb increaser"* of which 5 per cent composes the original vegetation. The 5 per cent recorded is entered in the *"Climax"* column. Fringed sage is not found in recognizable amounts in relict vegetation on this site and the 5 per cent recorded is not entered in the *"Climax"* column.

The *"Climax"* figures, added together, total 50 per cent. This means that, of the vegetation present on this site, 50 per cent is original or climax for the site. The range condition rating would be in the *"Fair"* condition class (from Table on page 6).

According to the stocking rate table for normal soils (pages 7 and 18) the stocking rate would be 0.20 AUM per acre. Thus 1,000 acres would provide 200 AUM's of grazing. If the pastures were to be stocked for 4 months, 50 mature cattle would be recommended, or for 10 months, 20 cattle.

ANIMAL UNIT EQUIVALENTS

The standard livestock unit is the *"animal unit"* defined as one mature cow, with or without unweaned calf at side, or equivalent. Animal unit equivalents for other classes of livestock are:

	Animal unit equivalent
Cattle:	
Weaned calves	0.60
Yearling heifers and steers	0.67
Mature cows with or without unweaned calf at side	1.00
Bulls, 2 years and over	1.30
Horses:	
Yearlings	0.75
Two-year-olds	1.00
Three-year-olds and over	1.25

Sheep, goats, and deer:

5 weaned lambs, kids and yearlings to 12 months	0.60
5 ewes or does, with ot without unweaned lambs or kids	1.00
5 rams or bucks	1.30
5 deer	1.00

Where the need is apparent, these equivalents may be adjusted as warranted by dependable local data. Needs may arise because forage available may not be equally usable by the different kinds of animals. Moreover, different kinds of animals may use importantly different areas or forage species within some pastures.

Recommended stocking rates are given in several ways, as, animal unit months per acre, acres per animal unit month, and acres per animal unit for 6, 9, or 12 months. The relation among these various concepts is shown below:—

Conversions from AUM per acre

AUM per acre	Acres per AUM	Acres for 6 months	Acres for 9 months	Acres for 12 months
.1	10.0	60	90	120
.15	6.7	40	60	80
.2	5.0	30	45	60
.25	4.0	24	36	48
.3	3.3	20	30	40
.35	2.9	17	26	34
.4	2.5	15	23	30
.45	2.2	13	20	26
.5	2.0	12	18	24
.6	1.7	10	15	20
.75	1.3	8	12	16
.8	1.2	7	11	15
.9	1.1	6.6	10	13
1.0	1.0	6.0	9	12
1.2	.8	4.8	7	10
2.0	.5	3.0	5	6

Most ranches use cultivated (seeded) pastures. These must be considered in the determination of stocking rate for the ranch unit. Examples are:

Pasture	Precipitation zone (Inches)	AUM per acre	Acres per AUM
Crested wheatgrass	10 to 14	0.6	1.67
	14 to 18	1.0	1.00
Russian wildrye	10 to 14	0.5	2.00
	14 to 18	1.0	1.00
Bromegrass	14 to 18	1.3	0.83
Intermediate wheatgrass	14 to 18	1.3	0.83
Pubescent or intermediate wheatgrass	14 to 18	1.3	0.83
Timothy	14 to 18	1.5	0.67
	18 to 22	3.0	0.33

COMMON AND BOTANICAL NAMES OF PLANTS MENTIONED

Grasses

Awnless brome	*Bromus inermis*
Bearded wheatgrass	*Agropyron subsecundum*
Beardless wheatgrass	*Agropyron inerme*
Bluebunch wheatgrass	*Agropyron spicatum*
Blue grama	*Bouteloua gracilis*
Canada wildrye	*Elymus canadensis*
Cheatgrass	*Bromus tectorum*
Columbia needle grass	*Stipa columbiana*
Foxtail barley	*Hordeum jubatum*
Fringed brome grass	*Bromus ciliatus*
Giant wildrye	*Elymus cinereus*
Green needle grass	*Stipa viridula*
Hairy wildrye	*Elymus innovatus*
Hooker's oatgrass	*Helictotrichon hookeri*
Idaho fescue	*Festuca idahoensis*
Indian rice grass	*Oryzopsis hymenoides*
Intermediate oatgrass	*Danthonia intermedia*
Intermediate wheatgrass	*Agropyron intermedium*
Junegrass	*Koeleria cristata*
Kentucky bluegrass	*Poa pratensis*
Little bluestem	*Andropogon scoparius*
Mat muhly	*Muhlenbergia richardsonis*
Needle-and-thread	*Stipa comata*
Northern awnless brome	*Bromus pumpellianus*
Northern wheatgrass	*Agropyron dasystachyum*

Grasses (continued)

Nuttall alkali grass	*Puccinellia nuttalliana*
Parry oatgrass	*Danthonia parryi*
Plains muhly	*Muhlenbergia cuspidata*
Plains reed grass	*Calamagrostis montanensis*
Pubescent wheatgrass	*Agropyron trichophorum*
Richardson needle grass	*Stipa richardsonii*
Rough fescue	*Festuca scabrella*
Russian wildrye	*Elymus junceus*
Saltgrass	*Distichlis stricta*
Sandberg's bluegrass	*Poa secunda*
Sand dropseed	*Sporobolus cryptandrus*
Sand grass	*Calamovilfa longifolia*
Sheep fescue	*Festuca ovina*
Slender wheatgrass	*Agropyron trachycaulum*
Ticklegrass	*Agrostis scabra*
Timothy	*Phleum pratense*
Tufted hairgrass	*Deschampsia caespitosa*
Western porcupine grass	*Stipa spartea* var. *curtiseta*
Western wheatgrass	*Agropyron smithii*

Sedges and Rushes

Awned sedge	*Carex atherodes*
Baltic rush	*Juncus balticus*
Low sedge	*Carex eleocharis*
Sun-loving sedge	*Carex heliophila*
Thread-leaved sedge	*Carex filifolia*

Forbs and Shrubs

Broomweed	*Gutierrezia diversifolia*
Cactus	*Opuntia spp.*
Canada thistle	*Cirsium arvense*
Dandelion	*Taraxacum officinale*
Fringed sage	*Artemisia frigida*
Goatsbeard	*Tragopogon dubius*
Goosefoots	*Chenopodium spp.*
Greasewood	*Sarcobatus vermiculatus*
Gumweed	*Grindelia squarrosa*
Hedysarum	*Hedysarum spp.*
Leafy spurge	*Euphorbia esula*
Lupine	*Lupinus spp.*
Nuttall's saltsage	*Atriplex nuttallii*
Peppergrass	*Lepidium densiflorum*
Russian thistle	*Salsoli kali*
Sagebrush	*Artemisia cana*
Shrubby cinquefoil	*Potentilla fruticosa*
Toadflax	*Linaria vulgaris*

Forbs and Shrubs (continued)

Tumbleweed	*Amaranthus albus*
Vetches	*Vicia spp.*
Western snowberry	*Symphoricarpos occidentalis*
Winterfat	*Eurotia lanata*

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ALBERTA GUIDE TO
RANGE CONDITION CLASSES IN
10" – 14" PRECIPITATION ZONE

PART I. KEY SPECIES AND THEIR RESPONSE TO GRAZING AS JUDGED FROM CLIMAX

December 1971

DECREASERS	INCREASERS	Maximum Percent Dry Weight Produced Annually in Climax (By Range Sites*)														INVADERS
		WL	Sb	Ov	SL	Sa	Sy	Si	Cy	CS	SwG	BIO	TB	Gr	BdL	
Rough fescue	Needle-and-thread	–	–	10	–	30	d	d	15	d	d	d	d	d	d	Russian thistle
Western porcupine grass	Blue grama grass	–	–	5	–	–	5	5	5	–	5	5	–	5	–	Cheatgrass
Green needlegrass	Sandberg's bluegrass	–	–	–	–	–	–	–	5	–	5	5	5	10	d	Foxtail barley
Slender wheatgrass	Junegrass	–	–	–	–	5	5	5	5	5	10	10	10	d	d	Gumweed
Bearded wheatgrass	Plains reed grass	–	–	–	5	–	5	5	–	–	10	10	10	10	d	Broomweed
Wildryes	Sand grass	–	–	–	–	10	5	–	–	10	–	–	–	–	–	Dandelion
Tufted hairgrass	Wheatgrasses	–	25	45	35	5	d	d	d	d	d	d	d	d	d	Goosefoots
Indian ricegrass	Plains muhly	–	–	–	–	–	–	–	–	–	–	–	5	5	5	Goatsbeard
Sand dropseed	Mat muhly	–	–	5	10	–	–	–	–	–	–	–	–	–	–	Tumbleweed
Nuttall alkali grass	Saltgrass	–	5	–	10	–	–	–	–	–	–	–	–	–	–	Canada thistle
Bluebunch wheatgrass	Sedge increasers	20	15	5	5	5	5	–	5	5	10	5	10	d	d	All other annuals
Thread-leaved sedge	Baltic rush	–	–	–	10	–	–	–	–	–	–	–	–	–	–	All other exotics
Tall sedges	Western snowberry	–	10	5	–	–	–	–	–	–	–	–	–	–	–	
Winterfat	Fringed sage	–	–	–	–	5	–	–	–	5	–	5	–	5	–	
Nuttall saltsage	Sagebrush	–	5	5	–	–	–	–	5	–	–	–	–	–	–	
Forb decreasers	Greasewood	–	–	–	10	–	–	–	–	–	–	–	5	–	d	
Woody decreasers	Woody increasers	15	15	15	5	10	5	–	–	15	–	–	–	–	–	
	Forb increasers	–	–	–	–	–	–	5	–	10	–	–	5	5	5	

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*The symbol '–' means that the species has less than 2½% coverage or is not present in the climax vegetation for this site. The symbol 'd' means that the species is a decreaser on this site. Range soil groups are described as follows: WL – WET LANDS; Sb – SUBIRRIGATED; Ov – OVERFLOW; SL – SALINE LOWLAND; Sa – SANDS; Sy – SANDY; Si – SILTY; Cy – CLAYEY; CS – CHOPPY SANDHILLS; SwG – SHALLOW TO GRAVEL; BIO – BLOWOUTS; TB – THIN BREAKS; Gr – GRAVEL; BdL – BADLANDS.

ALBERTA GUIDE TO
RANGE CONDITION CLASSES IN
14" – 18" PRECIPITATION ZONES

PART I. KEY SPECIES AND THEIR RESPONSE TO GRAZING AS JUDGED FROM CLIMAX

December 1971

DECREASERS	INCREASERS	Maximum Percent Dry Weight Produced Annually in Climax (By Range Sites*)															INVADERS
		WL	Sb	Ov	SL	Sa	Sy	Si	Cy	CS	SwG	Li	BIO	TB	Gr	BdL	
Rough fescue	Needle-and-thread	–	–	5	–	20	15	10	10	15	15	5	15	d	d	d	Russian thistle
Western porcupine grass	Blue grama grass	–	–	–	–	–	–	–	5	5	5	–	5	5	5	15	Cheatgrass
Green needlegrass	Sandberg's bluegrass	–	–	–	–	–	–	–	5	–	10	5	10	10	10	10	Foxtail barley
Slender wheatgrass	Junegrass	–	–	–	–	–	–	5	5	5	10	10	10	10	10	–	Gumweed
Bearded wheatgrass	Plains reed grass	–	–	–	–	–	–	–	10	–	–	–	15	d	5	–	Broomweed
Wildryes	Idaho fescue	–	–	–	–	–	5	5	5	–	5	5	–	d	d	–	Dandelion
Tufted hairgrass	Wheatgrasses	–	15	30	d	15	d	25	30	d	d	d	d	d	d	d	Goosefoots
Indian ricegrass	Plains muhly	–	–	–	–	–	5	–	–	–	5	5	–	5	5	–	Goatsbeard
Sand dropseed	Mat muhly	–	5	5	10	–	–	–	–	–	–	–	–	–	–	–	Kentucky bluegrass
Nuttall alkali grass	Sand grass	–	–	–	–	10	–	–	–	10	–	5	–	–	–	–	Timothy
Bluebunch wheatgrass	Little bluestem	–	–	–	–	–	–	–	–	–	5	5	–	–	–	–	Peppergrass
Hooker's oatgrass	Sedge increasers	25	15	5	5	–	5	5	–	5	5	5	5	10	d	–	Canada thistle
Sheep fescue	Western snowberry	–	–	–	–	5	–	5	5	–	5	–	–	–	–	5	Leafy spurge
Winterfat	Fringed sage	–	–	–	–	–	5	5	5	–	–	–	–	–	5	–	All other annuals
Nuttall saltsage	Sagebrush	–	–	5	5	–	5	5	–	–	–	–	–	5	–	5	All other exotics
Forb decreasers	Greasewood	–	–	–	10	–	–	–	–	–	–	–	–	–	–	5	
Woody decreasers	Woody increasers	10	–	–	–	10	5	–	–	10	–	5	–	–	–	5	
	Forb increasers	10	–	–	–	–	–	–	–	5	–	5	–	5	5	5	

*The symbol '–' means that the species has less than 2½% coverage or is not present in the climax vegetation for this site. The symbol 'd' means that the species is a decreaser on this site. Range soil groups are described as follows: WL – WET LANDS; Sb – SUBIRRIGATED; Ov – OVERFLOW; SL – SALINE – LOWLAND; Sa – SANDS; Sy – SANDY; Si – SILTY; Cy – CLAYEY; CS – CHOPPY SANDHILLS; SwG – SHALLOW TO GRAVEL; Li – LIMY; BIO – BLOWOUTS; TB – THIN BREAKS; Gr – GRAVEL; BdL – BADLANDS.

ALBERTA GUIDE TO
RANGE CONDITIONS CLASSES IN
18" – 22" PRECIPITATION ZONES

PART I. KEY SPECIES AND THEIR RESPONSE TO GRAZING AS JUDGED FROM CLIMAX

December 1971

DECREASERS	INCREASERS	Maximum Percent Dry Weight Produced Annually in Climax (By Range Sites*)													INVADERS
		WL	Sb	Ov	SL	Sa	Sv	Sy	Si	Cy	SwG	Li	TB	Gr	
Rough fescue	Western porcupine grass	—	—	—	—	d	d	5	5	5	—	5	—	—	Cheatgrass
Columbia needlegrass	Parry oatgrass	—	—	—	—	15	—	15	20	20	10	10	d	d	Foxtail barley
Green needlegrass	Idaho fescue	—	—	—	—	—	—	5	5	5	5	—	d	d	Dandelion
Richardson needlegrass	Intermediate oatgrass	—	—	—	—	—	—	10	10	10	15	10	5	5	Kentucky bluegrass
Slender wheatgrass	Junegrass	—	—	—	—	—	5	—	—	5	5	5	10	10	Timothy
Canada wildrye	Tufted hairgrass	20	20	10	10	d	d	d	—	—	—	—	—	—	Canada thistle
Indian ricegrass	Wheatgrasses	—	10	25	10	5	5	5	5	5	d	d	d	d	Tickle grass
Mountain brome	Plains muhly	—	—	—	—	—	—	—	—	—	5	5	5	5	Leafy spurge
Northern awnless brome	Saltgrass	—	—	—	10	—	—	—	—	—	—	—	—	—	Toadflax
Nuttall alkali grass	Sedge increasers	20	5	5	5	5	5	5	—	5	5	5	—	—	All other annuals
Bluebunch wheatgrass	Shrubby cinquefoil	—	—	—	—	5	5	—	—	—	10	—	5	10	All other exotics
Hooker's oatgrass	Lupine	—	—	—	—	5	—	5	5	—	—	—	—	—	
Tall sedges	Forb increasers	5	5	5	5	5	5	5	5	5	5	5	5	5	
Vetches	Woody increasers	15	10	10	10	10	10	5	5	5	5	5	5	5	
Hedysarum	Conifers	—	—	—	—	—	15	—	—	—	—	—	5	10	
Forb decreasers															
Woody decreasers															

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*The symbol '—' means that the species has less than 2½% coverage or is not present in the climax vegetation for this site. The symbol 'd' means that the species is a decreaser on this site. Range soil groups are described as follows: WL — WET LANDS; Sb — SUBIRRIGATED: Ov — OVERFLOW; SL — SALINE LOWLAND; Sa — SANDS; Sv — SAVANNAH; Sy — SANDY; Si — SILTY; Cy — CLAYEY; SwG — SHALLOW TO GRAVEL; Li — LIMY; TB — THIN BREAKS; Gr — GRAVEL.

ALBERTA GUIDE TO RANGE CONDITION AND RECOMMENDED STOCKING RATES

Part II. Guide For Making Recommendations For Stocking:

A. Guide to departures from basic table by range soil groups*

For WET LANDS, use 3X the value for the 18-22" p.z. For SUBIRRIGATED, use 2X the value for 18-22" p.z. For OVERFLOW, use values of next higher p.z. For SALINE LOWLAND, use values ½ to 1 p.z. higher. For SANDS, SAVANNAH, SANDY, SILTY, and CLAYEY sites, use values given for the p.z. For CHOPPY SANDHILLS, SHALLOW TO GRAVEL, LIMY, and BLOWOUTS, use values ½ to 1 zone lower than p.z. where located. For THIN BREAKS, use values 1 to 1½ zones lower. For GRAVEL, use values 1½ to 2 zones lower. For BADLANDS, use values 2 to 3 zones lower, but not less than one-half the values for the 6-10" p.z.

*Departures do not include utilization cuts because of inaccessibility. Apply any necessary utilization cuts after AUM's are totalled.

B. Stocking Rate Table for Normal Soils of Each Precipitation Zone

	Range Condition Percentages and Classes			
Average Annual Precipitation Zone	Excellent 76-100	Good 51-75	Fair 26-50	Poor 0-25
(Inches)	(Animal unit months per acre*)			
22-26	1.20	1.00	0.80	0.60
18-22	0.80	0.65	0.50	0.35
14-18	0.50	0.40	0.30	0.20
10-14	0.30	0.25	0.20	0.15
6-10	0.20	0.15	0.10	0.05

*All rates may be much higher if grazing is limited to season of complete dormancy.